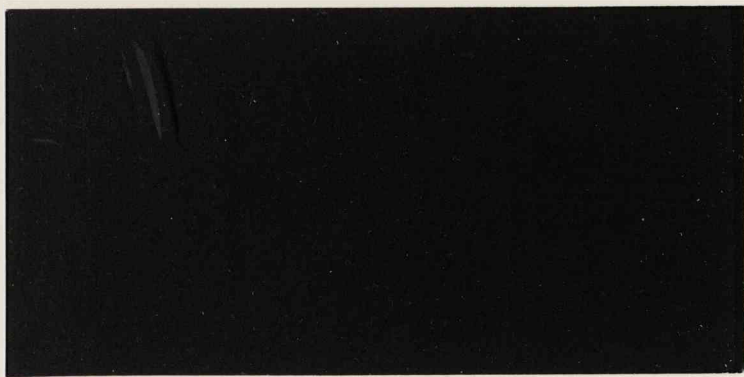


*Working paper N. 2/1995*

**Regulation  
of the electric supply industry in Italy**

Giovanni Fraquelli, Elena Ragazzi





REGULATION OF THE ELECTRIC SUPPLY

INDUSTRY IN ITALY

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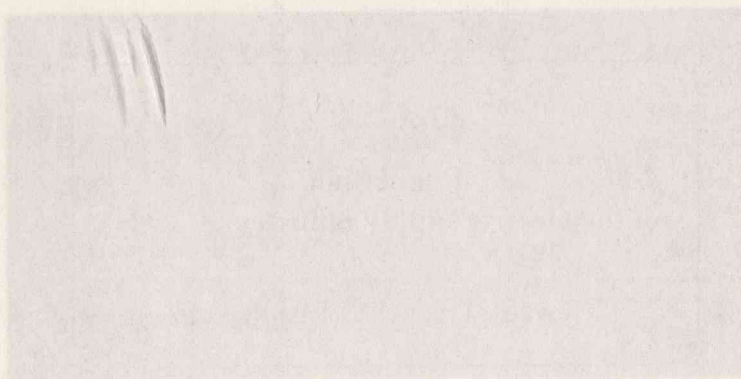
The Italian electric supplying activity has been concentrated in the hands of a State company (ENEL) since 1963, when private firms were nationalised. Since then, for nearly three decades the sector has been run under a nearly absolute monopoly. The first innovations were approved in 1982, but only in 1990 were some exceptions introduced which proved to be of some practical relevance.

At present ENEL is still the strategic (both for management and planning) core of the sector, although private operators have been given some spaces in electricity production. In such a concentrated situation, a complex regulatory system was not needed, nor was an independent body for coordination, control and planning considered necessary.

From an international point of view, the sector is now undergoing a quick and radical process towards a more competitive structure. Building up a probable scenario even for the near future would be an extremely hard job, because the only thing which seems to be clear is that ENEL is going to be privatised in a short while. But how this is going to happen cannot be easily forecast. Three main options could emerge: a) ENEL could be transformed into a private monopolist acting under regulation. b) The firm could be vertically disintegrated, with the birth of many firms, active at the different stages of the electricity supply activity. c) ENEL could be divided geographically into a number of vertically integrated firms, acting as regional monopolists. Within this process of change, great attention should be paid to the role of the State, which will have to be more active than it is now. International research project «Utility Regulation Network» funded by the «Human Capital and Mobility» EC Programme.







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## REGULATION OF THE ELECTRIC SUPPLY INDUSTRY IN ITALY

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20th February 1995

### Abstract

The Italian electric supplying activity has been concentrated in the hands of a State company (ENEL) since 1963, when private firms were nationalised. Since then, for nearly three decades the sector has been run under a nearly absolute monopoly. The first innovations were approved in 1982, but only in 1990 were some exceptions introduced which proved to be of some practical relevance.

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From an international point of view, the sector is now undergoing a quick and radical process towards a more competitive structure. Building up a probable scenario even for the near future would be an extremely hard job, because the only thing which seems to be clear is that ENEL is going to be privatised in a short while. But how this is going to happen cannot be easily forecast. Three main options could emerge: a) ENEL could be transformed into a private monopolist acting under regulation. b) The firm could be vertically disintegrated, with the birth of many firms, active at the different stages of the electricity supply activity. c) ENEL could be divided geographically into a number of vertically integrated firms, acting as regional monopolists. Within this process of change, great attention should be paid to make Italian regulation more compliant with EC rules than it is now.





## **1. Introduction**

Energy supply is a fundamental resource for any economy, and within this sector, the electric supply industry has a great role. This is true in particular for Italy. The weight of this source is rising and becoming more and more important, but the country imports nearly 15% of its needs of electricity, because of insufficient production capacity, even though this problem is likely to be solved in the future, and of cheaper foreign prices; moreover the generation mix is not sufficiently diversified and rates (taxes included) are among the highest in the EC. An explanation of this situation, besides structural aspects, such as the withdrawal from nuclear production, can also be found in Italian regulation that used the tariff system as an instrument to redistribute income and, moreover, began only a short time ago a slow process of change to induce more competition.

During the last decade some opportunities have been introduced in favour of self-producers and municipalities. Now it is common opinion that the only company that has been running the sector as a monopolist since 1963 (ENEL), is certainly going to be privatised soon. What on the other hand is not clear at all, is how this privatisation will take place. Policy makers are arguing about deregulation because some of them believe that vertical integration economies could be insufficient to cover the cost inefficiencies associated with a regulated monopoly. Furthermore, new technologies, such as the combined cycle gas turbine, require a lower capital to set up a new plant and guarantee good efficiency in generation with a smaller scale.

At present the regulation of the electric supply industry in Italy must be examined not within a static, well defined situation, but in the context of strong changes. The country is undergoing a moment of political instability, and is actually ruled by a transitory government, made up of "tecniciani". Anyway there is a wide consensus, even though not unanimity, on the necessity of privatisation.

The structure of the paper broadly reflects the two stage debate characterising Italian policy: regulation of present monopoly and new opportunities of deregulation, that are, at the moment, still proposals in progress.

Thus, after a brief description of the historical background, section 2 examines the evolution from a deregulated situation to a public monopoly. Section 3 focuses on the trends in present evolution, describing the pattern of policy in the last decade, and changes that are likely to be introduced in the near future. Section 4 contains some indications about the bodies in charge of regulations in Italy. Section 5 explains regulatory rules in production, transmission, distribution, tariffs, and some informal mechanisms of control. In section 6 we try to verify the degree of coherence of Italian situation with EC policy and regulation. Finally, the last section contains some concluding comments and some tentative policy recommendations.

## **2. Historical background**

Italy has followed for the electric sector the same historical path which can be observed in other industrialised countries, passing from a deregulated situation to a public monopoly, and beginning in recent years a gradual process of deregulation and opening towards private operators. But all these phases have taken place with a delay of some years, if compared to other European countries. In particular nationalisation took place more than fifteen years later than in France and in the United Kingdom.







This happened because the debate on the advantages and foundations of nationalisation, which in other countries was soon deviated towards the mechanisms regulating the market and income distribution, lasted throughout the Fifties.

Before nationalisation occurred, the electric sector in Italy had a rather complex structure. Production was shared between self-producers (29%), and a huge number of *elettro-commerciali* (1.400). Despite the high number this last group was very concentrated, with the first six firms controlling 55% of total capacity, council owned firms accounting for another 7%, and minor firms being limited to the remaining part of the market (9%). The six leading firms were organised as both industrial and financial holdings; they directly managed production and high voltage transmission, while distribution was left to consociated firms. Two of these firms were already State controlled. The *elettro-commerciali* firms operated in conditions very close to monopoly; their activity was subject to State concession, but the system lacked effective control and programming instruments.

There were 46 council firms (in 1962), which mainly distributed energy purchased by "electro-commercial" firms, even though some of them also had a complete cycle of production and distribution. Although their role proved very important in the areas in which they were active, because they induced a positive competitive process, it remained limited to few cases (above all if compared to the German case). The explanation of this is based on the lack of financial means necessary to start this activity.

Nationalisation took place in 1963, and concentrated all sectoral activities in one public company, ENEL, with the exception of municipal utilities, of self-producers already existing before nationalisation and having a share of self-consumption greater than 70% (to be reached within three years), and very small producers and distributors with a production of less than 15 GWh per year. This situation has lasted for nearly three decades, with an increasing role held by ENEL. In fact there has been a reduction in the share of self-producers, replaced by the public company activity. During this period ENEL took on a big rationalisation process. It had inherited from the nationalised firms a very unhomogeneous situation, as far as size, style of management and plant efficiency are concerned, but the greatest discrepancies could be found in the diffusion and quality of services offered in different areas. Tariffs have been equalised all over the country, and efficiency, both in production and distribution, has been increased.

### 3. Trends in present evolution

The situation described previously of absolute public monopoly lasted up to 1982, when law 308, intended as an instrument to promote energy saving and production from renewable sources, began a process of change. With this law private operators were allowed to produce electricity, and were only obliged to sell their surplus to ENEL. But the expectations raised from this innovation were to be disappointed. The complex bureaucratic procedures to get a concession outweighed the very limited incentives; energy exchanges between societies of the same group were not allowed, and, above all, prices paid for electric surplus were too low, insufficient to cover production costs. These were all concrete obstacles which hampered the success of this law.

More recently, in 1991, laws 9 and 10 have progressed further, in the same direction, with more radical changes. The most interesting innovations brought to the previous regulation are the following:







- Private producers are no longer obliged to have a share of self-consumption greater than 70%;
- Electricity surplus must still be sold exclusively to ENEL, but electricity exchanges can take place between firms of the same group; sales to private operators are not allowed;
- The price of transferring this surplus is quite interesting for the producers;
- There has been a complete liberalisation of production by renewable sources, and by co-generation of electricity and heat. The maximum capacity limitation has been cancelled;
- Energy produced by renewable sources can also be freely exchanged between electric firms controlled by municipalities, between firms in which municipalities (or their controlled firms) have an interest, and between consortia or the firms belonging to them.

In short, it can be observed that these laws, as far as the electric sector is concerned, were intended to introduce marginal, but non irrelevant, elements of privatisation, maintaining in the meanwhile the full strategic control and responsibility in the hands of ENEL. In fact, it must be considered that the requests for authorisation of new power capacity come to about 8.000 MW, and 5.000 MW have already been authorised so far.

The last legislative measure that concerns the electric sector is law n° 359 of 1992, which gave ENEL the status of S.p.A, that is a stock company. This formal transformation can have practical operative implications, regarding strategies and finance, but they depend heavily on the contents of the Concession of the government to ENEL, which has not been approved yet. In fact as a stock company ENEL maintains all the monopolistic power it had previously, and the situation will remain unchanged until the approval of the new act of concession. The contents of the proposal of concession, which has been in discussion in the first months of 1994, are very interesting to understand what could be a possible scenario for future years. Of course nothing ensures that, especially after the political changes that are taking place at present, politicians could take on a completely different view regarding the electric sector regulation.

The concession should regulate relations between the government and ENEL. In the case of privatisation this act becomes very important because investors need a precise framework about behavioural opportunities of this company. The most significant points of this concession are the following:

- ENEL has the exclusive right to manage production, import-export, transport, transformation and distribution. The right concerns all activities reserved to ENEL by present laws;
- ENEL will have the task of coordinating all the electricity industry in Italy. In particular, the activity of every operator will be subject to a contract drawn up between ENEL and the association of selfproducers. The company will have the possibility to diversify the activity but the electric service must maintain the priority;
- a contract between ENEL and the government, called *Contratto di Programma* (programming contract), will define long-term company goals. The goals will have to be coherent with a good quality and efficiency of the service and the strategic development of the industry;







- the concession will be free of charge and will last 99 years;
- general interests of the country may allow the government to modify and also to revoke the concession.

The proposal of concession has not been approved yet , but the question will come up again on the government agenda, when the decision to privatise will become operative. Many perplexities arose, in the debate on the concession, which may cause important variations. As we have seen above, the condition of monopoly would be confirmed for 99 years , would be free of charge and ENEL would have a large choice of managing strategies for the industry. ENEL would also enjoy special privileges that in the past were given to the state firm. These concern free concessions about building rights and priority rights about research in the geothermic sector and renewable sources.

At present, political debate is dominated by the discussion about the opportunity to go on with a monopoly condition. In fact, the industrial board association proposes a division between production and distribution, whereas other political forces ask for the creation of few regional firms. In particular the industrial board insists on the importance of creating competition and of creating different societies active at different stages of production and supply. So if the actual situation imposes at present to privatise ENEL as a sole society, the Parliament must be careful to prevent any future obstacle towards liberalisation. For this reason the board suggests to grant three separate concessions, instead of one, and above all to grant no exclusive concession, to allow the existence of competitors.

In the short term, the solution of maintaining the monopoly condition might be accepted but in this case it would be necessary to reconsider a public ownership. A sole society can enjoy advantages of vertical integrated process, can plan long term investments with a single strategy and obtain scale economies. But there are, on the other hand, many disadvantages too. Competition doesn't exist and there are extremely weak opportunities to improve efficiency. This can be forecast because other experiences in Europe show that it is easier to get a profit by practicing a monopolistic price than by reducing costs. The large size of the firm could give the management a strong market power and would make it difficult for self producers to become real competitors in the future. Anyway the monopolistic power of ENEL will be reduced at the time in which an European market for energy will be created. In order to control for electricity industry productivity, new systems of calculating the rates are going to be introduced. A price-cap system could bring about a recovery of efficiency but the absence of market competition doesn't enable to verify if they are fixed at the correct level.

If the decision is to keep a sole agent, the constitution of a very strong authority becomes very important. Without a strict control it is difficult to think that a public company operating as a monopolist could be more efficient than a state company.

All these reasons turn the debate towards other opportunities. As we have seen above, the most appreciated alternatives concern the division of the ENEL company into separate firms. The first opportunity, the one which is attracting increasing interest, concerns a new organisation of the sector by creating many different societies operating in production, transportation, intended as a common carriage activity, and distribution. The production structure would be composed of a few operators (4-5) supplying the distributors in high tension and working in competition with foreign companies too.

In this case, a common carrier would be necessary. This activity could be managed by a







transportation state company. The society could also manage hydroelectric plants that are regulated by particular laws regarding the concession of water. Common carrier would also have the responsibility of indicating working priorities of plants, that must be activated under conditions of minor operating costs within the different producer firms.

Distribution of energy could be shared between a few regional firms. Their number could be high (10-15), because there aren't particular scale economies that could lead to a reduction in the number of distributors. They would have the task of defining purchasing contracts with producers, and supplying domestic consumers and firms.

A second opportunity concerns the division of ENEL, setting up a limited number of vertically integrated firms, operating as regional monopolists. In this case too, the high voltage grid, together with the hydroelectric central management, could be granted to a State firm.

This hypothesis would bring about vertical integration economies, but would also mean the impossibility to introduce true deregulation and competition. However the presence of more than one operator, could offer the opportunity of cross-sectional comparisons, which are useful when you have to fix rates, quality standards, pollution standards. It would also be possible to overcome the problems that in many countries arise from the separation between producers and distributors: the difficulty to define a correct strategic planning of investments, and to coordinate the operators. A limited number of vertically integrated firms would involve more coordination as regards the government goals to increase production provision sources diversification.

This second solution could also have financial advantages. A better evaluation of ENEL equity would in fact be possible. This would make it easier to privatise the sector, also because sales on the stock market could be delayed over a longer period, avoiding financial shocks.

#### **4. Attribution of functions and decisional power**

The final responsibility for the electric sector, lacking a single independent body, acting as a regulator, is attributed to the Ministry of Industry, which is the true regulatory body in Italy. Up to 1994 there were other administrative structures which had a competence on the electric sector, and which had above all price regulation functions.

The first of these bodies was the **CIP** (Interdepartmental Committee for Prices), which has above all price regulation functions. The areas of competence of this body comprehend tariff determination, and the fixation of the prices of some goods (drugs, oil products, newspapers, etc.). To decide prices and tariffs, CIP follows procedures specific for each product and service. These procedures were controlled by an other body, the **Central Commission for Prices**, which was composed not only of delegates of the departments which composed the CIP, but also of representatives of ISTAT (the Italian Statistical Office) and of social parties (trade unions, trade associations, consumer organisations).

However tariff fixation for electricity was not solely responsibility of CIP. A part of the price paid by the consumer, called thermic surcharge and intended to cover increases in variable costs due to rises in oil prices, is determined directly by the Ministry of Industry. This surcharge, together with all other extra charges fixed by the CIP, are paid by all consumers, also those served by municipal firms, to a separate body, the **Cassa Conguaglio per il Settore Elettrico** (Balance Fund for the Electric Sector). The funds collected are then







transferred to the firms which use fossil fuel. Its function is justified by the necessity of balancing different production cost structures of firms active in different areas, in presence of equal tariffs on the whole national territory, and so avoiding losses or extra- profits. At a local level price competence was attributed to the CPP (Provincial Committees for Prices). As electric tariffs have been unified, their function in this field was limited to supervision and control.

The second relevant body (actually still in charge) is the CIPE (Interdepartmental Committee for Economic Policy), which, having a task of general political planning, also has of course the task of dealing with energetic matters.

Among its various tasks, the CIPE must in fact supervise general strategies, for example on investments, of State owned companies (ENEL is one of these); more over it has a programming function on the national supplying policy, of which, given the nearly complete lack of national sources, energetic products represent one of the main objects.

After the abolition of CIP and of Central Commission for Prices, price responsibility is up to the Ministry of Industry, and in particular to the Direction for Energy Sources. This competence is transitory, and will be transferred to the authority that, by law, must be created before privatisation.

How the system works, in a set up of public monopoly has been described above. Now that public utilities are going to be privatised, it is of course necessary to have a reform of the system of regulation and control. Parliament is now debating this new asset, and the tendency is towards a single body responsible for electricity and gas, while other bodies will be created for the remaining utilities.

## **5. Structure of the sector, formal regulatory rules and mechanisms**

### **5.1 Production**

As has been seen above, there are four kind of operators active in power production: ENEL, municipal firms, self-producers and independent producers.

ENEL is of course the main producer; in 1993 its production represented 81.1% of total national output. The introduction of laws 9 and 10 1991 will bring about a reduction of this share, which in 1990 had a value of 83.6%, but the effect cannot be felt yet, because the first requests have begun to be authorised just a short time ago. We are however still far from a strong tendency towards competition, and production is still much more concentrated than the situation ante nationalisation. In 1960 the firms which were going to be incorporated in ENEL represented 74.3% of national production.

This concentration in production results in ENEL being a large producer, placed only after the French EdF (a country in which production has an even more concentrated structure) in the European ranking, and at the third place in the world ranking, as far as power capacity is concerned.

It is organised as a vertically integrated structure, responsible for all the three main phases of which the service is composed, production, transmission and distribution. It is composed of a central unit controlling several local offices. The central unit has a coordination function, and provides for those functions which can not be decentralised, such as planning, research, allocation, engineering and building of new plants and finance. Local units are on the other hand in charge of all the operative functions of the electric service.







**Table 1 - Structure of Production and Distribution of Electricity in Italy**

SOURCES	Production			Distribution	
	1960	1990	1992	1990	1992
ENEL	74.3	83.6	81.1	92.7	87.1
Municipal utilities	5.9	3.5	4.1	7.0	12.5
Small and self producers	11.8	12.9	14.8	0.3	0.4
Total	100.0	100.0	100.0	100.0	100.0

Source: ENEL

The municipal electrical firms operate on a restricted geographical basis, limited to one town and some municipal districts in the surroundings. There are 56 of them and they provide to the needs of 195 municipalities. Not all of them have a complete cycle of production, and their share of national production is not so great: on average in 1993 they account for 4.1% of national output. Their presence is concentrated in the North of Italy, with the only big exception of Rome. 94.2% of the power produced from municipal firms comes from the Northern Regions, 3.9% from the Central ones, and only 1.8% from the South. This uneven geographical distribution means that the low average value hides very different roles played by this category of producers at a local level. In fact municipal producers in some regions account for a relevant share of electricity locally produced; the highest values are reached in Piedmont (19%) and Lombardy (15%).

Small producers are firms with private ownership. Up to the end of 1990 they had to limit their production within the boundaries of 15 GWh per year, or of 40 GWh if obtained from renewable sources. For this reason their weight on national output was very limited, lower than 1%. Hydroelectric power represents the majority of this production.

Self producers were obliged, up to 1990, to have a share of self consumption greater than 70%. This limitation has been repealed, and procedures to get the concession have been simplified. Their share on national output, which is not at all irrelevant, has shown a slight increase, passing from 12.9% in 1990, to 14.8% in 1993. Experts working inside the Department of Industry think that the greatest increases in Italian power capacity in the near (and even middle) future are likely to come from independent producers. The quantitative relevance private producers can have on national capacity in a near future, when all authorisations for new plants (8.000 MW) will be granted, has been indicated above. Nevertheless this development will depend heavily on ENEL's attitudes to act as a carrier between different plants of the same group, and on prices paid for energy surplus sold to ENEL.





The expansion of capacity is one of the greatest problems Italy has faced till now. Italy is in fact the only country in the EC to present a great negative disequilibrium.

**Table 2 - Electricity Balance for Italy (1992 - Gwh)**

<b>SOURCES</b>	<b>245,434</b>	<b>USES</b>	<b>245,434</b>
Hydroelectric pr.	45,787	Agriculture	4,331
Thermoelectric pr.	176,997	Industry	120,561
Geothermic pr.	3,459	Services	47,377
		Domestic uses	55,739
<b>Total gross production</b>	<b>226,243</b>	<b>Total consumption</b>	<b>228,008</b>
Power employed in pr.	16,756	Losses	16,779
<b>Total net production</b>	<b>209,487</b>		
<b>Imports</b>	<b>35,947</b>	<b>Exports</b>	<b>647</b>

Source: ENEL balance sheet for 1992

As can be seen in table 2, imports represent nearly 15% of total sources. This situation originated historically from the poor Italian energy sources stock, but above all from the withdrawal from nuclear production. Such a heavy import dependence for electricity should be reduced with a strong investment planning, both by ENEL and by private producers. Italian disequilibrium in production doesn't come only from insufficient capacity, but also from territorial plant distribution. Table 3 shows in fact big regional discrepancies between local production and needs. The consequences are an overcharge of high voltage lines and a great incidence of losses, even if Italian efficiency in transmission is comparable to the best E.C. countries.

It is interesting to notice the great regional and local differences. The Southern regions are the ones which show the greatest deficit, expressed as a share on electricity demand, while the greatest absolute deficit can be found in the Northern Regions. Only in the two islands there is a surplus. Going more into detail, in the North of Italy positive balances are typical of regions characterised by high hydroelectrical production and low industrialisation rates. On the other hand the most industrialised (Lombardy, Piedmont and Emilia Romagna) regions show that local production can not cover the needs. The second region in particular shows a particularly high deficit (a reason for this can be found in the closeness to the French border, through which most imports enter Italy). Similar great differences can be found in all the big areas in which Italian territory is traditionally divided.





**Table 3 - REGIONAL PRODUCTION AND CONSUMPTION OF ELECTRICITY IN ITALY (1991 - Gwh)**

	Production	Consumption	Balance	Share of balance on demand (%)
Piedmont	9,007	21,560	-12,553	-58.2
Val d'Aosta	2,849	867	1,982	228.6
Lombardy	33,442	50,106	-16,664	-33.3
Trentino A.A.	9,055	4,420	4,635	104.9
Veneto	22,712	22,334	378	1.7
Friuli-Venezia G.	6,244	6,715	-471	-7.0
Liguria	15,461	6,410	9,051	141.2
Emilia Romagna	11,988	17,875	-5,887	-32.9
<b>Northern Italy</b>	<b>110,758</b>	<b>130,323</b>	<b>19,565</b>	<b>-15.0</b>
Tuscany	13,770	15,986	-2,126	-13.3
Umbria	2,403	4,441	-2,038	-45.9
Marche	983	4,814	-3,831	-79.6
Latium	20,057	18,186	1,871	10.3
<b>Central Italy</b>	<b>37,213</b>	<b>43,337</b>	<b>-6,124</b>	<b>-14.1</b>
Abruzzo	1,925	4,540	-1,925	-42.4
Molise	307	897	-590	-65.8
Campania	3,339	14,794	-11,455	-77.4
Puglia	13,319	13,606	-287	-2.1
Basilicata	546	1,647	-1,101	-66.8
Calabria	9,534	5,168	4,366	84.5
<b>Southern Italy</b>	<b>28,970</b>	<b>40,625</b>	<b>-11,682</b>	<b>-28.8</b>
Sicily	19,496	16,830	2,666	15.8
Sardinia	9,450	9,827	377	-3.8
<b>Islands</b>	<b>28,946</b>	<b>26,657</b>	<b>2,289</b>	<b>8.6</b>
<b>Italy</b>	<b>205,887</b>	<b>240,969</b>	<b>-35,082</b>	<b>-14.6</b>

Source: ENEL

Looking at the regulation of electric energy production established by laws 9 and 10 of 1992, private firms can now generate power for their own use or for sale to ENEL, after getting a licence from the Ministry of Industry. As a consequence after the introduction of this law the difference between self and small producers is no longer relevant as far as production is





concerned. Small producers do exist as a separate category, since they are also allowed to supply electricity. The Ministry can also authorise the expansion of existing plants, or the construction of new ones. Private producers can use the power generated also for societies belonging to the same group, but are obliged to sell their surplus to ENEL.

All the following matters are to be regulated by specific agreements between ENEL and the firm:

- transfer of power to ENEL;
- contract supplies for ENEL;
- common carriage;
- exchanges of power.

The agreements will be bound to follow special directives of the Ministry of Industry, which will take into account the technical feasibility of the named operations, and public service needs.

Prices for all these operations will be decided by CIP, on the basis of the "principle of avoided costs" (plus some incentives for hydroelectric and renewable production). They are up-dated at least once every two years. The principle of avoided costs allows ENEL to pay electricity not on the basis of the average costs of self-producers, but of its real cost saving. Price is divided into three components: plant costs, operative costs and fuel costs, corresponding to something less than the average costs for ENEL. In the cases in which a time of sale rate is paid, the criterion is closer to a marginal cost price fixation principle, because plant costs are acknowledged only for peak hour supplies, while at other hours only fuel costs are acknowledged. The last measure now in force is the provision CIP n° 6/1992, which fixed very favourable conditions for electricity sales to ENEL.

Municipal firms can operate in all the fields of electric service (production, transport, transformation, distribution and sale) under concession. Each firm will sign an agreement with ENEL, following an outline agreement issued from talks between ENEL and the trade association of council firms. This document must indicate rights and duties of the parts, the instructions for coordination, causes which justify the failure of the contract, and the general criteria for the regulation of sales, exchanges and common carriage. Both the general and the specific agreements are subject to the approval of the Minister of Industry.

Production of power from renewable sources is subject to a different regulation. Law 9 states in fact that ENEL has no exclusive right in this field, and thus no authorisation is needed to produce electricity from renewable sources, or employing techniques that are comparable, such as the combined production of electricity and heat. Anyone who wants to install a new plant of this kind must only give communication of his intent to the Ministry of Industry, to ENEL, and to the fiscal bureau locally competent for taxes on buildings. Here again all the operations with ENEL are going to be regulated by particular agreements which will follow a general model approved by the Ministry after consulting the Regions. Prices are to be defined by CIP, which will establish incentives for this kind of production, valid for the first eight years. Electricity produced from renewable sources is not limited to self consumption, but can also circulate between consortia, firms belonging to consortia, and special firms of local authorities.





## 5.2 Transmission and distribution

The greatest share of high and medium voltage electricity transport is carried out by ENEL. ENEL owns 90% of the Italian network, while the remaining part is shared between municipal firms and self-producers. The management and coordination of the internal net is committed to a special body dependent on ENEL, the "*Centro Nazionale di Controllo*" (National Control Centre). It manages directly the 220/380 kV lines, and gives operational instruction to lower hierarchical bodies (compartmental divisions and peripheral control centres). At an international level, on the 380kV network, the coordination function is accomplished by the UCPTE (Union for the Coordination of Production and of Transport of Electric Power).

Distribution to final consumers is also very concentrated in the hands of ENEL: it supplies 87.1% of electricity consumed in Italy. The remaining part is supplied by municipal firms. Both ENEL and municipal firms have the full responsibility of the areas in which they operate, so that at a local level they act of course as monopolists. The borders of the areas of competence are decided on a case by case basis, by means of specific agreements.

There is also a marginal contribution given by small firms, that are also allowed to supply electricity if they produce (or purchase from ENEL) and then supply power within the limits of 15 millions Kwh per year. This limit is raised to 20 millions Kwh for firms operating in small islands, and to 40 millions Kwh, if the part exceeding 15 millions is obtained from renewable sources. All these values may be exceeded if power is supplied by firms that were already established when the law was approved exclusively in the council district to which the firms belong.

Municipal firms, and any other operator active in the distribution of electricity must draw up a balance sheet in compliance with a model prepared by the Ministry of Industry, must submit it to auditing, and get it approved by Regional authorities. Then the balance must be sent to the Ministry of Industry.

## 5.3 Tariffs

Italian electrical tariffs have been unified over the whole national territory since 1961, that is even before nationalisation took place. On the other hand they are differentiated on the basis of supplying characteristics: voltage level, subscribed demand and utilisation time. Tariffs depend also on the destination of electricity purchased: domestic uses, public lighting, use in places other than homedwelling houses, and agricultural purposes.

Nearly all tariffs are composed of two parts: a demand charge depending on subscribed demand, and a price for electricity consumed.

Since 1974 the variable price of electricity has been split in turn into two parts: one intended to cover operating fixed costs of electricity production, the other, called thermal supplement, corresponding to the variable costs for fuel used in thermal production. This thermal supplement is charged on all customs, including those supplied by municipal firms. Its value depends on prices of fuel employed in thermal power plants, and on prices and quantities of electricity imported. The thermal burden is collected by distributors and transferred to the *Cassa Conguaglio per il Settore Elettrico* (Electricity Sector Equalisation Fund), and they are then allocated only to the producing units in proportion to the cost of fuel purchase.







This mechanism allows to maintain a sole tariff structure throughout the national territory, in presence of firms with different cost structures, avoiding losses and extra-profits. But on the other side this acts as a disincentive for a wider use of other sources.

Let's now have a closer look to the structure of tariffs by category of user.

Lighting uses include the electricity employed by State bodies (Councils, *Province*, etc.) on roads and streets, in railway plants and stations, in ports and airports, and so on. Rates are different in the case of regular supplies and of occasional supplies.

Domestic supplies, all carried out at low voltage, are those characterised by the most complex structure. They include all uses in private houses, and can also include uses in premises close to the dwelling house, provided there is a single delivery point and power is lower than 15 kW. The customer can choose between different blocks of subscribed demand: 1,5; 3; 6; 10 kW and more, but the great majority of users are concentrated in the first two classes. These are the so called *fascia sociale* (social range). They are diversified depending on whether the house represents or not the main residence of the family. Rates are strongly progressive (as opposed to other EC countries). The *fascia sociale* enjoys very favourable rates, as far as the fixed monthly charge, the cost per Kwh and the thermal supplement are concerned. Since these two classes include in reality not a small share of population, the poorest one, but more than 95% of all domestic customers, measures have been introduced to make this social range more selective. Benefits are now fully enjoyable only by monthly consumptions which do exceed 150 kWh for 1.5 kW uses, and 220 kWh for 3 kW uses. Beyond these limits benefits are progressively reduced as consumption increases.

Consumers using a power of 6 kW or more, can choose between a flat rate tariff and a day-night tariff. Daily hours are in this case divided into two ranges, corresponding to separate costs of energy, while the thermal supplement remains the same. The intent is to offer this possibility of choice also to other categories of users progressively.

Agricultural uses enjoy favourable tariffs, depending on the use of electricity, season, and utilisation time.

Supplies to premises other than houses have different structures in the case of low, medium and high voltage supplies. For low voltage, there are special rates for uses concentrated exclusively in low load hours. Two rate time-of-day tariffs have been introduced, as an experiment, for uses higher than 25 kW in agriculture and in food productions employing electrical ovens.

Time-of-day rates have been introduced for high and medium voltage industrial supplies, divided into two seasons and four hourly ranges. Apart from that, tariffs are digressive according to subscribed demand, electricity consumed and load factor.

To get the price paid by the user for electricity one must add to ENEL rates a complex system of taxes. First of all there is VAT (which can be recovered from non final consumers), which has a share of 9% for extractive and manufacturing industries, and for domestic uses, and of 19% for all other uses. Then there are different taxes which go to the Councils, the *Province*, and the central fiscal administration, which decrease as consumption grows, for professional uses, and increase for domestic uses. Taxes are also higher for domestic use out of the house of residence.

Fiscal imposition on industrial uses is extremely heavy (16% on average), while in other EC countries it is absent. For this reason industrial rates in Italy are the highest in industrialised countries (with some exceptions in some areas of Germany), and problems would arise in case of harmonisation inside the EC.







#### 5.4 Mechanisms of strategic coordination

In Italy a formal regulation doesn't exist, as far as mechanisms of control are concerned. There are nevertheless two instruments which respond partly to this task: the "*Contratto di Programma*" (Programming Contract) and the "*Principi sull'Erogazione dei Servizi Pubblici*" (Principles on public service supply, which is a sort of behavioural code). A wider range of instruments will probably be available with the birth of the authority that will control the electric utilities.

The *Contratto di Programma* establishes the goals to be achieved in the electricity field and the instruments that have been created to allow the Ministry of Industry's control. The present contract will last five years (1/1/91 - 31/12/95) and it covers the following topics: increase in production, energy saving, environment control, supply quality and operating efficiency, economic and financial equilibria.

In particular:

- ENEL is prepared to guarantee a strong increase in power generating plants. During the five years indicated, it is going to build new plants with a new generation power of about 5.000 Mw; among these, 1.000 will have to come from alternative energy sources.
- As for energy saving, many actions have been put forward to improve thermic efficiency; the company is requested to lower the ratio fuel per unit of production by 1.5% between 1991 and 1995. Technological improvements are also required in transmission and distribution, to deliver electricity steadily at a low loss factor.
- Rigorous constraints have been defined to control environmental pollution. During the period indicated above, ENEL has to make new investments to cut back SO<sub>x</sub> and NO<sub>x</sub> emissions by 8%.
- ENEL has also to guarantee quality of the service and operating efficiency. More customer satisfaction and reduction of costs is necessary to obtain this result. The waiting period for connection of new customers must be reduced to 6 days by 1995. The possibility to sign the supply contract by phone and to pay invoices by credit card must be given too. By 1995, ENEL must reduce the number of employees in order to obtain an increase in the number of customers per employee from 223 to 265.
- ENEL will have to obtain all the result described under the constraint of financial and economic equilibria. Looking in that direction a rates adjustment system has been set up. It is quite similar to a price-cap mechanism. ENEL is allowed to adjust its tariffs according to the behaviour of operating and financial costs, but the increases will be cut back, by an improvement in productivity, by 1.5 per year.

As we have seen, the contract signed by ENEL and the government is not a formal mechanism of control but represents a binding commitment for the activity of this firm. It sets some strategic goals for the country, ensuring an increase in power supply with a better generation mix and environmental protection and new energy sources. On the supply and customers side, it asks for quality and efficiency recovery. The real drawback of this system is the absence of sanctions in the case of non execution.

The second instrument is contained in law 27/1/94, inherent to public service supply. It concerns all public utilities, but the electric sector is expressly underlined. It is stated in it that







the service supplying activity must take into account all the following general principles:

- all customers have equal rights, which means that they must receive equal treatment in presence of equal supplying conditions.
- impartiality, that is objectiveness towards customers.
- continuity, so that supplying is continuous, regular and without interruptions.
- customers have right of choice of the supplier, where the monopoly condition should be abandoned.
- customers may participate in quality evaluation
- efficiency and effectiveness in the management.

To reach these goals some instruments have been identified. All firms involved in public services supply must adopt them in the short term, acquiring all the necessary tools. As far as the electricity service is concerned, it seems important to underline the following specific instruments:

- the adoption of quality standards to be verified by users by means of public meetings.
- simplified procedures to get access to the service.
- consumers will be clearly informed as regards service supplying mechanisms, technical aspects, quality standard reached at the moment, energy saving, also by means of special offices.
- service evaluation, by means of sample inquiries, whose results will be the object of special publications.
- refund and indemnification in case of disservice, when quality standards are not achieved.

Users should be safeguarded by means of special complaint procedures, which will have to be of common knowledge. Moreover special internal offices will have the task of evaluating consumers complaints, and of taking measures against defaulting employees. A committee will be created at the presidency of the Council of Ministers, composed of three independent experts, which should be able to give judgments free from both political parties and company interests. It will have the task of controlling that the named principles are correctly applied.

## **6. Degree of coherence with EC rules**

As we want to verify the degree of coherence of the Italian situation with EC regulation, we have to define the priority aspects proposed by the EC government. The EC emphasises the problem of national monopolies or exclusive rights, the fiscal imposition on energy rates, the transparency of costs, consumer prices and pollution control.

As far as the first aspect is concerned the Italian situation must be correctly analysed. It seems to be in conflict with 1° comma art.90 of the Treaty of Rome. This says that public firms, or those with special rights, can be given the opportunity of avoiding the issue of market competition.

In fact in March 1991, the EC Commission began legal proceedings against Italy, France, Spain, Holland, Ireland and Denmark. The opinion of the EC is that the maintenance by the public monopolies of the exclusive rights concerning electricity import-export works against







the EC regulation on competition. The Italian government thought that the new law number 9/92, which gave more opportunities to private companies would be sufficient as a reply to the Community. It must be said that the Italian government defends itself by referring to the art. 90 comma 2. It indicates that the regulations of the Treaty of Rome work for firms that manage public utilities under the limitation of the strategic interest of their activity.

However Italy has thought, at least until now, that the specific situation of its country with regards to electricity needs to maintain the electricity supply united under the direction of a sole operator. The efficiency in production could be stimulated by international competitive bidding, concerning investment in new power capacity and consequent management, as long as it is reciprocal, at an international level. It must be underlined that new producers are intended to have the possibility of selling energy only to their subsidiaries or to the monopoly operator, ENEL.

The contrast with EC has not been solved yet. Freedom of electricity import-export with other EC operators is indicated as a condition to improve the efficiency of this activity. At present this is the real Italian problem that must be solved with the EC. Recently Brussels has deferred Italy and the other countries above indicated to the European Justice Court. The ENEL monopoly is judged irregular as the exclusive right of exchanging energy with other countries is concerned.

The opinion of is that the EC, Art.90 comma 2 can not be considered as a support of the electricity producers' thesis: the guarantee of safety and an effective control of supplies is not considered sufficient to justify an import-export monopoly.

As for the subject of rates, a comparison with other countries indicates that the average Italian price is quite high. Analysing the coherence with the EC framework, it can be seen that this situation depends heavily on the imposition system and the rate structure.

As far as fiscal law is concerned, we can see a substantial homogeneity in the case of domestic users. On the other hand industrial users are more heavily taxed than in the EC.

Industrial users have to accept heavy taxation (VAT excluded), about 16%, that, in general, does not exist in other European countries with the exception of a few regions in Germany. This is a big problem for Italy. If we try to comply our system with EC rules we'll have a reduction of fiscal revenues and electricity demand could increase our need to import.

The other peculiar characteristic of the Italian system concerns the structure of domestic rates. Italian rates are structured in a strongly progressive way while in the EC we have digressive rates. Electricity rates are still intended as an instrument of income policy and reduction of consumption.

On the other hand we can see a perfect coherence with EC directives regarding price and cost transparency and environment control. Italy has the same prices all over the country and contracts and supplies conditions are managed with complete transparency. As for the costs, ENEL is going to publish a balance sheet, giving information about the different costs of production and distribution.

Finally, with regards to pollution, we can see a great effort to comply Italian plant structure with the EC regulation. Since 1990, ENEL has invested almost six thousand billion ECU in this field. A heavy reduction of emission of  $SO_2$  and  $NO_x$  is a tangible result of this activity still in progress.

Many countries in the EC started in advance but the recovery obtained in the early nineties, puts Italy in a situation that is quite similar with respect to other EC countries.







## **7. Conclusions and evaluations**

At present the main problems of the electric supply industry in Italy concern the structural weakness about energetic sources mix and the absence of competition. Some other problems exist such as: the deficit of internal power, the level and structure of rates, the different taxation of industrial rates, compared to EC, and the delay in creating an authority or a set of regulatory rules, but they are going to be solved, or have a strong connection with the solution of the first problems indicated above.

Given such a context, what are the main items concerning regulation or deregulation in the near future?

The improvement of source mix needs a political and ideological change in favour of nuclear power, which seems to be difficult to forecast in the short term. The problem of competition seems on the other hand quite different. The decision concerning privatisation has been already taken, but how this privatisation will be carried out must still be decided: which stock company control? Which opportunities to improve competition?

Till now the government is considering changing with the creation of a private company and some opportunities for independent producers and municipalities. Increasing gradually the role of independent producers and of municipalities, that's the idea! The present capital and rates incentives, or new instruments, such as competitive bidding to build and manage new power stations, should enlarge the market.

It is sure that new incentives are increasing the interest in building new power. It may be that the deficit of capacity will find a solution with a good presence of private companies, but in this way competition doesn't work and the consumers have to bear higher rates. The creation of new distributors, managed by societies owned by ENEL jointly with privates, could bring a slight improvement to the system. However if we want real competition, we have to open the market to imports. Municipal distributors, and all other distributors have to be allowed to buy electricity from abroad and from other Italian producers, which is also one of EC aims. Contemporarily we have to cut the favourable rates planned in the case of selling energy to ENEL, with the exception of renewable sources. This is one opportunity, but it takes a lot of time to work. If we cut such favourable rates, the interest of small private producers, with low scale economies in producing electricity will be reduced. To have competition in the short term, the most feasible thing is to separate production and distribution within ENEL, with the creation of some companies in both activities and a common carrier for transportation. It is obvious that the possibility of imports must be accepted. The feasibility of this solution derives from present ENEL organisation. Already now, production is independent from distribution and transmission. Multiregional structures working in production and distribution have a self sufficient organisation and can easily become independent companies. Furthermore, the sum of the value of the new firms would be certainly greater than what the government could obtain by putting the State company on the stock market as just one society. This kind of deregulation could also make the "authority" pay attention to the relations between costs and structure of the rates, by creating more homogeneity respect to the EC.

At this moment, it is difficult to provide a ranking across the possible deregulation schemes. Inside Italy competitive bulk power markets could be feasible and could bring welfare gains. But this choice needs another reply. Is it better than a vertically integrated system, competing with other European producers in a market without import barriers? We are quite uncertain about the real dimension of vertical economies between the generation and distribution stages of electricity supply. However we do have one certainty: mere privatisation without any form of competition doesn't mean more welfare for the consumers.







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